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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Franz Thoemmes

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EXAMINER

BOECKMANN, JASON J

ART UNIT

PAPER NUMBER

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/564,226	Applicant(s) THOEMMES, FRANZ	
	Examiner JASON J. BOECKMANN	Art Unit 3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8, 10 and 14-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8, 10 and 14-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 January 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8, 10 and 14-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over French et al. (6,382,532), in view of Kobayshi et al. (US 2002/0185555)

French shows a fuel injector (10) comprising; a valve needle (42) an armature (30) forming an axially movable valve port together with the valve needle, a restoring spring (62) acting upon the armature, a magnetic coil (66) cooperating with the armature, a valve-seat body (22), a valve closure member (34) which forms a sealing seat with the valve seat body and; a valve sleeve (14) surrounding the armature and the valve needle, wherein an outer diameter and a radial cross section of the valve sleeve decrease between an inflow-side region and a discharge-side region on a collar, wherein the radial cross section and the wall thickness of the inflow-side region are constant from the collar to a location axially beyond the valve needle in a direction opposite the discharge direction of the fuel; wherein the radial cross section and decreased wall thickness of the discharge-side region are constant from the collar to a discharge-side end of the valve sleeve, and wherein the constant decreased radial

cross section and the wall thickness of the discharge-side region extend axially beyond the valve needle in both the discharge direction of the fuel and the direction opposite the discharge direction of the fuel, but does not specifically disclose that a wall thickness of the valve sleeve varying across its axial direction at the collar, wherein the wall the wall thickness of the valve sleeve decreases in a discharge direction of a fuel.

However, Kobayshi et al. shows a fuel injector (1) comprising; a valve needle (26) an armature (7C) forming an axially movable valve port together with the valve needle (7A), a restoring spring (9) acting upon the armature, a magnetic coil (11) cooperating with the armature, a valve-seat body (5), a valve closure member (7B) which forms a sealing seat with the valve seat body and; a valve sleeve (22) surrounding the armature and the valve needle, a wall thickness of the valve sleeve varying across its axial direction wherein the wall the wall thickness of the valve sleeve decreases in a discharge direction of a fuel, wherein an outer diameter and a radial cross section of the valve sleeve decrease between an inflow-side region and a discharge-side region on a collar (figure 4). Basically section B has a greater diameter and wall thickness than section A because it needs to be able to bear the remarkable pressure applied to it when a molten plastic is applied there onto under injection molding of the plastic cover 14.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to make the upper portion (the portion with a greater outside diameter) of the valve sleeve (14), of the fuel injector of French, have a greater wall thickness than the wall thickness of the bottom section (the section of smaller outer

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diameter) of the valve sleeve (14). It is noted that in both fuel injectors (French and Kobayshi et al.) the plastic sleeve (98 and 14 respectively) is over molded on the out side of the fuel injector. This modification would allow for the valve sleeve of French to be able to bear a higher pressure when a molten plastic is applied thereto when the plastic cover is made by injection molding, as taught by Kobayshi et al. (Paragraph 0037).

It is noted that the term "in order to limit noises emissions," of line 13, is being considered a functional limitation and is given little or no patentable weight in an apparatus claim.

It is noted that the terms "having greater material strength" and "having lower material strength," of lines 17 and 18 are being construed to mean having a greater strength. The term "material strength" is commonly used in the art to be a specific property of a material, not a property of the shape of the material. According to the figures and the applicant's disclosure, it seems as if the applicant is using the term "material strength" to describe a property of the shape of the valve sleeve. This is acceptable because the applicant is allowed to be his own lexicographer, however, the examiner would like to make it clear on the record that the term difference in material strength claimed in lines 17 and 18, does not mean that a different material is being used for the different sections of the valve sleeve, but it is merely referring to the change of shape of the valve sleeve and how it affects the strength of the different sections of the valve sleeve.

Regarding claims 10 and 14, the wall thickness of the valve sleeve is about 0.5 mm in an inflow-side region and about 0.3 mm in a discharge-side region (paragraph 0038).

Regarding claims 15 and 16, French et al. shows a fuel injector having an intake pipe (70) that extends beyond the valve sleeve to span an axial distance between the valve sleeve and a seal (106) disposed in a region of central fuel supply, and a filter element (78) that is pressed into the valve sleeve between the electrical plug contact (86) and the discharge side region. The modification above does not affect these features.

Regarding claim 17, the fuel injector of French et al. as modified Kobayshi et al. by includes a filter (78) located between the electrical plug (86) and the discharge side region of the valve sleeve.

Regarding claim 18, the intake pipe of the fuel injector of French et al. as modified Kobayshi et al. radially contacts the seal.

Regarding claims 19-22, in the fuel injector of French et al. as modified Kobayshi et al. the collar spans an axial distance that is less than an axial distance spanned by the constant decreased radial cross section and the constant decreased wall thickness of the discharge-side region; and the constant decreased radial cross section and the constant decreased wall thickness of the discharge-side region extend axially along a majority of an overall axial length of the valve sleeve; and the collar spans an axial distance that is less than an axial distance spanned by the constant decreased radial cross section and the constant decreased wall thickness of the discharge-side region;

and the constant decreased radial cross section and the constant decreased wall thickness of the discharge-side region extend axially along a majority of an overall axial length of the valve sleeve. These features are all present in the French injector and do not change when the cross sectional wall thickness of the upper section of the valve sleeve is increased due to the modification above.

Response to Arguments

Applicant's arguments with respect to claims 8, 10, 14-22 have been considered but are moot in view of the new ground(s) of rejection.

It is noted that a new interpretation of the French and Kobayshi et al. references is provided in the 103 rejection above.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON J. BOECKMANN whose telephone number is (571)272-2708. The examiner can normally be reached on 8:00- 5:00, Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Len Tran can be reached on (571) 272-1184. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason J Boeckmann/
Examiner, Art Unit 3752
12/17/2009

/Kevin P. Shaver/
Supervisory Patent Examiner, Art
Unit 3754